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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/086,060	02/27/2002	Byron A. Alcorn	100110642-1	1432

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HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, CO 80527-2400

EXAMINER

TUNG, KEE M

ART UNIT	PAPER NUMBER
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2676

DATE MAILED: 04/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/086,060

Applicant(s)

ALCORN ET AL.

Examiner

Kee M Tung

Art Unit

2676

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 29-39 is/are allowed.
- 6) ☒ Claim(s) 1-3,7,9-11,15,17-26 and 28 is/are rejected.
- 7) ☒ Claim(s) 4-6,8,12-14,16 and 27 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

The amendment filed 2/26/04 has been considered in preparing this Office action.

Claim Rejections - 35 USC § 112

1. Claims 10 and 17 recite the limitation "the plurality of user terminals" in 1. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3. Claims 1, 2, 9, 10, 17-23 and 28 are rejected under 35 U.S.C. 102(a) as being anticipated by Humphreys et al (WireGL: A scalable graphics system for clusters, hereinafter "Humphreys").

Humphreys teaches a centralized resource system (Figs. 1 and 2) comprising a plurality of computer resource units (Fig. 2, application stage, Apps); a plurality of visualization resource units (Fig. 2, graphics accelerators or engines, Geom and Rast); a switching fabric (Fig. 2, high speed cluster interconnect) operable to dynamically couple select one or more of the plurality of visualization resource units to select one or more of the plurality of compute resource units for generating at least one graphical image from a plurality of graphical images; and a plurality of display devices (Fig. 2, displays; and page 134, col. 1, first full paragraph, suggests to allow each pipeserver to drive a single locally attached display) coupled to the one or more select visualization

resource units operable to display the at least one graphical image. Therefore, at least claims 1, 9 and 22 anticipated by Humphreys.

As per claims 2, 10 and 23, Humphreys teaches the plurality of display devices is coupled to the one or more select visualization resource unit via network (Fig. 2, image composition network).

As per claim 17, Humphreys teaches the plurality of user terminals are located remotely from the plurality of first and second resource units (page 130, col. 1, third full paragraph, suggests communication after the application stage provides a redistribution of primitives to **remote** graphics accelerators).

As per claims 18 and 19, Humphreys teaches connected compute resource units to visualization resource units via computer network or Intranet (page 133, col. 2, section 3.3).

As per claims 20 and 21, Humphreys teaches the plurality of compute and visualization resource units comprise CPU (such as, application or graphics accelerators).

As per claim 28, Humphreys teaches a data storage means (such as, main memory) coupled to the first resource means (APP or CPU) for storing data.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3, 11 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Humphreys et al (WireGL: A scalable graphics system for clusters, hereinafter "Humphreys").

The teachings of Humphreys are given in previous paragraph of this Office action. However, Humphreys fails to explicitly teach or suggest the plurality of visualization resource units further comprising a plurality of compositors coupled to the graphics engine. It would have been obvious to one of ordinary skill in the art at the time the present invention was made to implement the teachings of Humphreys to integrate the plurality of compositors into the same subsystem or unit of visualization resource unit in order to reduce component size, cost and increase the bandwidth. Therefore, at least claims 3, 11 and 26 would have been obvious.

6. Claims 7, 15, 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Humphreys et al (WireGL: A scalable graphics system for clusters, hereinafter "Humphreys") in view of Eckart (5,408,606).

The teachings of Humphreys are given in previous paragraph of this Office action. However, Humphreys fails to explicitly teach or suggest the switching fabric is a crossbar switch. This is what Eckart teaches (Fig. 2; 50). It would have been obvious to one of ordinary skill in the art at the time the present invention was made to replace the high speed cluster interconnect of Humphreys by the crossbar switch of Eckart in order to rearrange the streams of graphics data to be further processed in parallel as taught by Eckart (col. 2, lines 24-33). Therefore, at least claims 7, 15, 24 and 25 would have been obvious.

Allowable Subject Matter

7. Claims 29-39 are allowed.
8. Claims 4-6, 8, 12-14, 16 and 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
9. The following is a statement of reasons for the indication of allowable subject matter:

The prior art made of record fails to anticipate or make obvious the claimed invention. Specifically, the prior art fails to suggest or teach, in combination with remaining elements and/or steps, a second switching fabric coupling the compositors to the plurality of graphics pipelines as recited in claims 4, 5, 12, 13 and 35; and an agent operable to determine a requirement for computing resource units, determine a requirement for visualization resource units, and allocate the computing resource units and visualization resource units as recited in claims 6, 14, 27 and 29.

Response to Arguments


10. Applicant's arguments with respect to claims 1-39 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kee M Tung whose telephone number is 703-305-9660. The examiner can normally be reached on Tuesday - Friday from 5:30 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on 703-308-6829. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Kee M Tung
Primary Examiner
Art Unit 2676